

DVO

DROPOUT

+FIX

USER GUIDE

WHAT DOES IT DO?

Dropout refers to a visual disruption such as pixelation, flickering, or freezing that occurs in video footage due to missing or corrupted data in specific frames or areas of the image. It manifests as brief interruptions or gaps in the video signal, where portions of the image are temporarily lost or distorted.

Dropouts can be caused by various factors, including transmission errors, damaged tapes, storage or encoding issues, or even inherent limitations of the recording equipment.

DVO Dropout + Fix will fix all your Head problems and tape drops, big & small, Luna & Chroma, with the added power to repair specific areas and imperfections in a single frame through the addition of our **Fix** tool. **Fix** repairs artifacts like scratches, hairs and blotches and larger damage like punch holes, film tears and full frame reconstruction.

Using a brush or shape tool to select the damage, **Fix** automatically repairs the selected area by comparing it to adjacent frames and applying motion compensation to recreate missing detail plus grain compensation to blend in the recreated information.

HOW DO YOU USE IT?

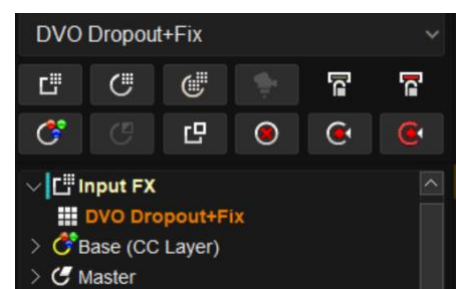
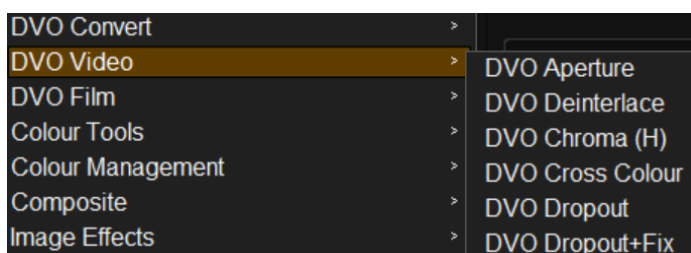
DVO Dropout + Fix works on the following platforms:



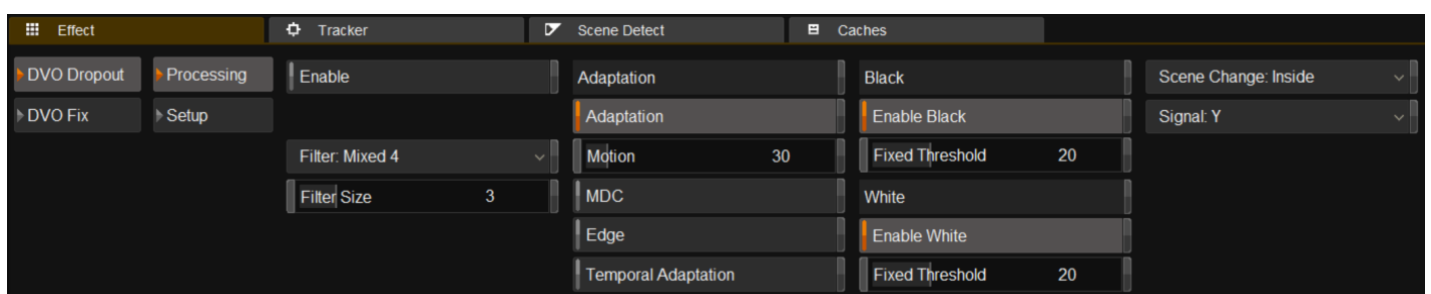
If you're already a Filmworkz veteran, you can jump right in and use **DVO Dropout + Fix** however if you need a hand with anything, our friendly AI assistant [Juno](#) is your first port of call. Whether it's guidance with DVO tools, help getting started in Phoenix or Nucoda, access to the latest versions or discovering best practices, **Juno** offers instant, accurate support, any time you need it - that's 24/7 because **Juno** never sleeps!

GETTING STARTED

1. Launch your platform on your workstation.
2. Locate the toolbar, (positioned on the left-hand side of the interface)
3. Scan the toolbar options until you find the **DVO Dropout + Fix** tool.



4. Click on it and the control panel under appears:

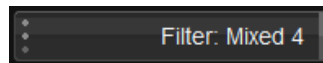


CONTROL PANEL EXPLAINED

DROPOUT TAB

FILTER

SPATIAL / TEMPORAL / MIXED FILTERS

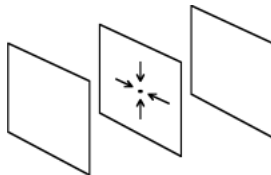


The filters used by the process are very important in determining the final processed quality. DVO Dropout includes a variety of filter algorithms that can effectively process a wide range of input footage.

The following generic filter groups are defined.

Values: Spatial, Mixed 1, Mixed 2, Mixed 3 (default), Mixed 4, Temporal 1, Temporal 2, Copy Prev, Copy Next, Bypass

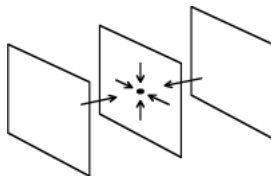
SPATIAL:



All filters named *Spatial* are filters that work only within the current field i.e., it has taps only in the current field.

These filters are intended for very small spots.

MIXED:

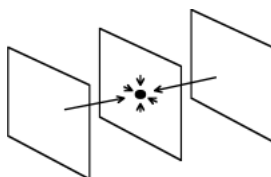


All filters named *Mixed* have taps in both the current field, the frame before and the next frame i.e., it has **both spatial and temporal taps**. All these filters, however, have more taps in the current fields than in the previous and following frames together (more spatial taps than temporal).

These filters are intended for normal dropouts.

The different Mixed types (Mixed 1,2,3 etc.) change the ratio between spatial and temporal. The larger the number, the more temporal filtering.

TEMPORAL:



Temporal filters have both spatial and temporal taps but with more temporal than spatial. This will enable DVO Dropout to remove any size of drops.

These filters may need more careful use to avoid unwanted artefacts.

FILTER SIZE



This sets the size of the filter on the current field, so it's only required for spatial and temporal filters. Use the numeric slider to define the filter size.

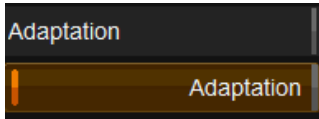
The optimal size of dropout filter size is 3

Range: 0 - 15

Default: 3



ADAPTATION



This toggles *Adaptation* on/off.

When **off**, DVO Dropout works in *global* mode and filters the whole image with the same fixed filter selected in the *Filter* menu.

MOTION



This numeric slider configures the level of motion sensitivity.

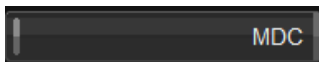
Initially you can set it to 0 (safest), for maximum motion sensitivity, and then increase it in steps if there isn't enough filtering in moving parts of the picture. A value of 256 corresponds to no motion adaptation at all, meaning that temporal filtering can be fully applied to moving parts of the image.

If there is motion on the pixel that you want to process, a value of 0 will disable processing and a value of 255 will allow it. The values between will allow less or more motion to be processed.

Range: 0 - 256

Default: 30

MOTION DETECTION CURRENT



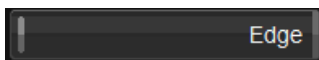
The MDC (*Motion Detection Current*) toggle button will do the following:

- Look at just the previous and next field, or
- Look at previous, next *and* current field.

Having this option enabled ensures a higher sensitivity level and reduces artefacts to a minimum. For maximum filtering, the control is disabled.

If you start seeing visible artifacts from processing, enable MDC.

EDGE

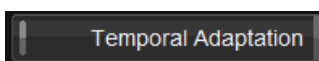


This controls the image's *edge protection*.

Edge protection acts as a safety measure and reduces the possibility of false detection. Some material may require this protection; for example, houses at a distance, a forest or material with a slight weave.

By turning edge protection on, the built in edge detector will affect where DVO Dropout will filter, and it'll reduce filtering where it finds edges.

TEMPORAL ADAPTION

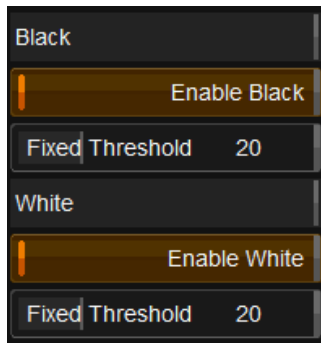


Temporal Adaption works by excluding falsely detected dropouts from being processed. It does this by comparing dropouts detected on the current field with dirt detected on the previous field (within a sizable window).

For **static dropouts** like *head clogs*, *Temporal Adaption* needs to be in off mode.



BLACK / WHITE

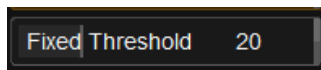


There are two separate and independent parameter groups controlling the processing for Black (dark) and White (light) areas (or in chroma mode, high or low U or V levels).

White/black dropout removal can be enabled via the corresponding toggle button.

Note that if **neither** button is enabled then DVO Dropout will do no filtering at all.

FIXED THRESHOLD



You should lower the thresholds if you have very low contrast white dropouts on light background, or black dropout on dark background, and increase the thresholds if the luminance difference between the dropouts and the background is less apparent.



Set the threshold lower.

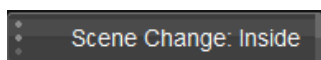


Set the threshold higher.

Range: 0 - 63

Default: 20

SCENE CHANGE

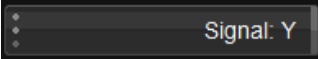


This dropdown gives you options for how to process the frames surrounding an edit/cut point:

- Inside:** Processes the field before a cut using only the current and previous field and processes the field after a cut using only the current and next field. Stays inside the shot. This is the default.
- Across:** Ignores cuts, use the previous, current, and next frame. It processes across shots.
- Bypass:** Doesn't process the frames before or after a cut.



SIGNAL



This selects the signal (channel) within which a dropout will be detected.

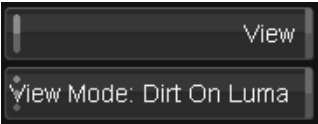
The detection works on **one channel only**, normally 'Y'. By setting the signal to 'U', for example, when only U dropouts are visible, DVO Dropout will detect the chroma dropouts better, minimizing the risk of affecting actual picture content.

Values: Y,U,V,R,G,B,Y+U+V

Default: Y

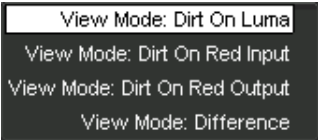
SETUP

VIEW



Turning on the View toggle button will provide an overlay/preview showing the areas detected. The type of overlay can be selected via the View Mode dropdown list (below).

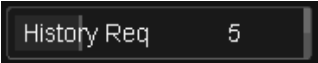
VIEW MODE



Choose the desired mode to view the dropouts:

- Dirt on Luma:** The detected dropouts are highlighted on a monochrome input picture with lowered luminance. This is the default.
- Dirt on Red Input:** The detected dropouts are shown with red on the unprocessed input signal.
- Dirt on Red Output:** The detected dropouts are shown with red on the processed output signal.
- Difference:** The difference between the unprocessed input and the processed output is displayed.

HISTORY REQUIRED



DVO Dropout works *recursively*. This means the result on any one frame depends on previous frames.

For the best results a certain amount of frame history needs to be built up. This numeric slider is used to specify how many frames of history to use.

Range (frames): 0 – 15

Default: 5



USE HANDLES



Use Handles controls whether the history includes available handles of a scene/shot.

Normally, the history frames accumulated will end on a shot edit/event (start/end edit). However, there may be extra frames available (handles) before or after the start and end editing points and these will be included as history if *Use Handles* is enabled.

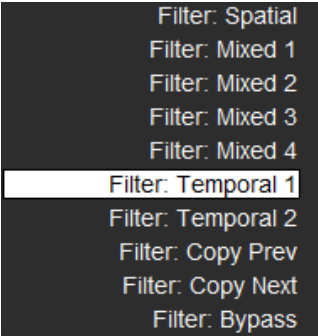
If handles exist, full and precise processing will be available from the first frame of a clip.

MAX FILTER



Enable *Max Filter* to add a second filter (in addition to that in the *Processing* tab).

FILTER



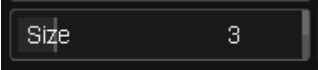
Use this dropdown to select the *maximum* filter to process large dropouts.

When the *Max Filter* is enabled, the normal filter used for the adaptive filter sizing will take care of the small dirt. When the **upper size limit** is reached it'll automatically switch over to the filter selected here.

The filter used here would typically be a larger temporal filter.

Values: Spatial, Mixed 1, Mixed 2, Mixed 3, Mixed 4, Temporal 1 (default), Temporal 2, Copy Prev, Copy Next, Bypass

SIZE



This specifies the size of the *spatial* part of the filter (for *spatial* and *mixed* filter types).

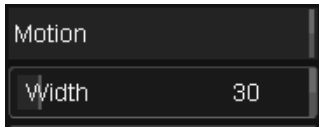
Range (frames): 0 – 15

Default: 3



MOTION

WIDTH



Motion Width is used in combination with the *Motion* control in the *Processing* section and defines the motion adaptation behavior.

Zero - When *Motion Width* is set to 0, the motion setting will be used as a threshold, discriminating between moving and non-moving parts.

Non-Zero - When *Motion Width* is set to a non-zero value, the classification will change gradually from “no motion” to “full motion”. Motion width then specifies the size of the transition region.

Range: 0 – 255

Default: 30

MDC SCALE



The MDC (*Motion Detection Current*) toggle button in the *Processing* section determines whether to look at just the previous and next field/frame, or to look at all the previous, current, and next field/frame.

The **higher** the *MDC Scale* setting, the more filtering is applied (less impact of the MDC algorithm).

This is only used if MDC (Motion Detection Current) control is enabled in the *Processing* section.

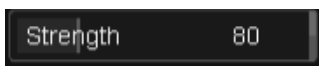
Range: 0 – 15

Default: 8

TEMPORAL

The purpose of *temporal adaptation* is to exclude false detection from processing by comparing it with the detection on the previous frame within a sizable window.

STRENGTH



Strength level determines the amount of influence that the detected dropouts on the previous frame will have on the exclusion of dropout detection in the current frame.

A higher value will result in more dropouts being excluded and less processing carried out.

Range: 0 – 255

Default: 80



TRIM SIZE

The Trim Size corresponds to a "window" in the previous frame which is searched for dropouts to compare against the current frame. The smaller the window (trim size) the more filtering will be achieved.

Range: 0 – 7

Default: 5

HIT GROWTH

The Hit Growth control is useful when the dirt in the image doesn't have **well-defined edges**.

By increasing the hit growth, the processor is told that the dropout is bigger than it appears. The result is that the soft edges also are processed.

RELATIVE

In relative mode, large dropouts cause a larger growth.

The Relative slider controls the amount of hit mask growth. The higher the value, the larger the area around the dropout will be processed.

Range: 0 – 15

Default: 3



BRUSH MENU

The brush tool appears in the viewer as an oval shape. Use this tool to fix an area by either clicking or clicking *and dragging* the brush.

SIZE

A horizontal slider control with a dark background. The label "Size" is on the left, and the value "20.000" is on the right. A vertical line indicates the current position.

The size tool allows you to resize the brush in order to fix smaller/larger areas.

You can also resize the brush by holding down the SHIFT key (on either the keyboard or control panel), the left mouse button and dragging.

Range: 0.1 - 5000

Default: 20 pixels

RATE

A horizontal slider control with a dark background. The label "Rate" is on the left, and the value "10.000" is on the right. A vertical line indicates the current position.

The rate tool applies to when you drag the brush, affecting how many brush 'stamps' are performed during the dragging motion.

Range: 2 - 1000

Default: 10

RECT MENU

The rectangle tool displays a crosshair in the viewer, allowing you to draw a rectangle around the area that you want to fix. As soon as the rectangle has been drawn the DVO Fix effect will start processing.

SOFTNESS

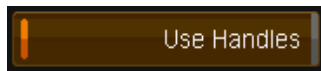
A horizontal slider control with a dark background. The label "Softness" is on the left, and the value "0.200" is on the right. A vertical line indicates the current position.

The softness setting applies to the border outside of the rectangle and allows you to adjust how the outline blends into the surrounding area. This numeric slider takes values between 0-1.

Range: 0.00 - 1.00

Default: 0.2

COMMON MENU



The **Use Handles** button controls whether the tool uses *source handles* when rebuilding the frame. This is important at scene boundaries (edits) because the tool rebuilds using frames before and after the current frame.

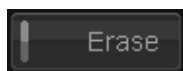
If this button is on, and we're at a scene boundary (start or end of shot), if we have handles, we will use them as part of the rebuilding process.

If there are no handles, or this button is off, no frames before or after will (or can) be used at the scene start (or end), and this impacts the *DVO Fix* result.

Tip: You can change the type of cut when you have a scene-detected longplay/mixdown file by clicking on the toolbar at the bottom of the interface & altering the type of cut (scene cuts and edit cuts) to use handles when necessary.



ERASE

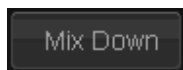


The Erase button becomes enabled as soon as a fix is made to the current layer.

Turning on the Erase button will turn the brush into an **eraser** and applying this to the fixed area of your image will 'undo' previous fixes.

You can't erase changes made to a mixed-down layer.

MIXDOWN

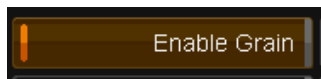


The **Mix Down** button becomes enabled as soon as a fix is made to the current layer.

Pressing Mix Down will make the changes to the current layer permanent, "burning" them into the image.

This tool allows you to apply fixes with different settings to the same area.

ENABLE GRAIN



Enable Grain will turn on the grain compensation. This adds grain to the 'fixed' area as appropriate, blending the changes into the scene. The default setting is off.

The parameters are the same as the DVO Regrain effect.

COLOR



The drop-down list will default to the project setting for the input format. You need to set this control according to the material that you are working with. If the footage was shot with a *video* camera, select a **linear** format. If this control is not set correctly the material may not be processed properly.



WANNA KNOW

MORE?

JUNO

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SALES

